Digital Front Door

A seamless patient care experience

SickKids: the Business

Operations

Research

Hospital and Clinical Care

Education

Patient Visits

Virtual, 89154, 29%

Emergency, 66618, 22%

Clinic, 152663, 49%
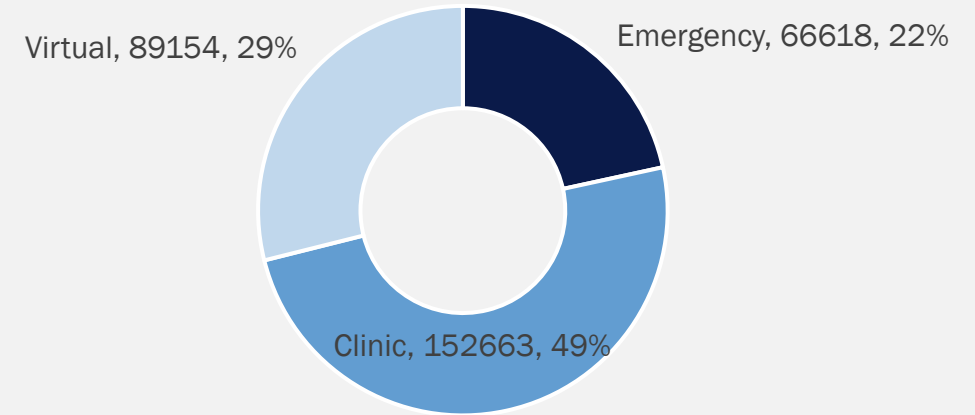
- Patients and clinical staff will be the central user base of digital innovations at SickKids

- Integrate the needs for education and research add value to long-term impact of digital solutions

- Virtual care services are being leveraged and have potential for great cost savings and new customer acquisition

SickKids Current Digital Solutions

Strengths

- Accelerated digital adoption since COVID-19
- A team of highly trained and specialized pediatric experts
- A culture of innovation, constantly striving to find better ways to care for children

Weaknesses

- Point solutions that lacks systematic integration and data sharing
- High user costs discouraging system usage

Threats

- Cybersecurity and data privacy
- Funding challenges

Opportunities

- Integrated medical resources can improve efficiency and provide more services
- A user-friendly platform can reduce learning costs and increase user satisfaction
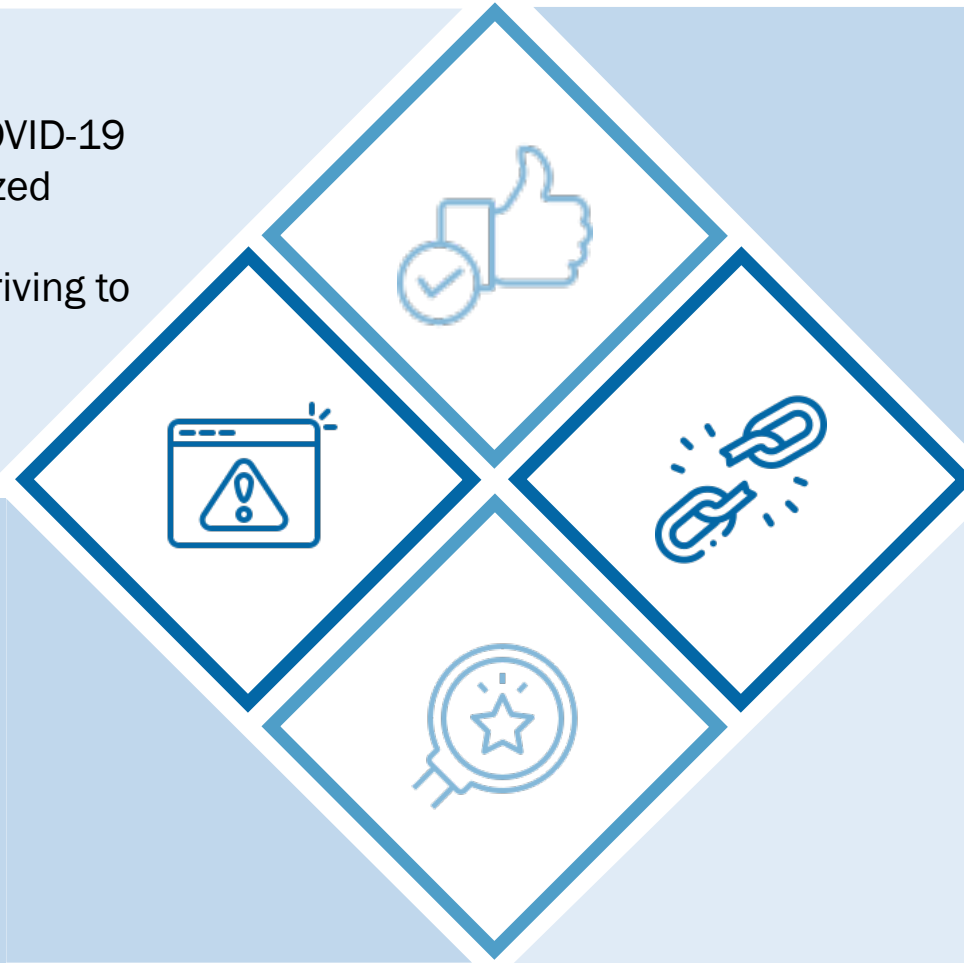
Business Problem

Key Issues

Fragmented User Experience

Current digital innovations are point solutions that work in silos, causing disruption to the digital experience and burdening administrative support
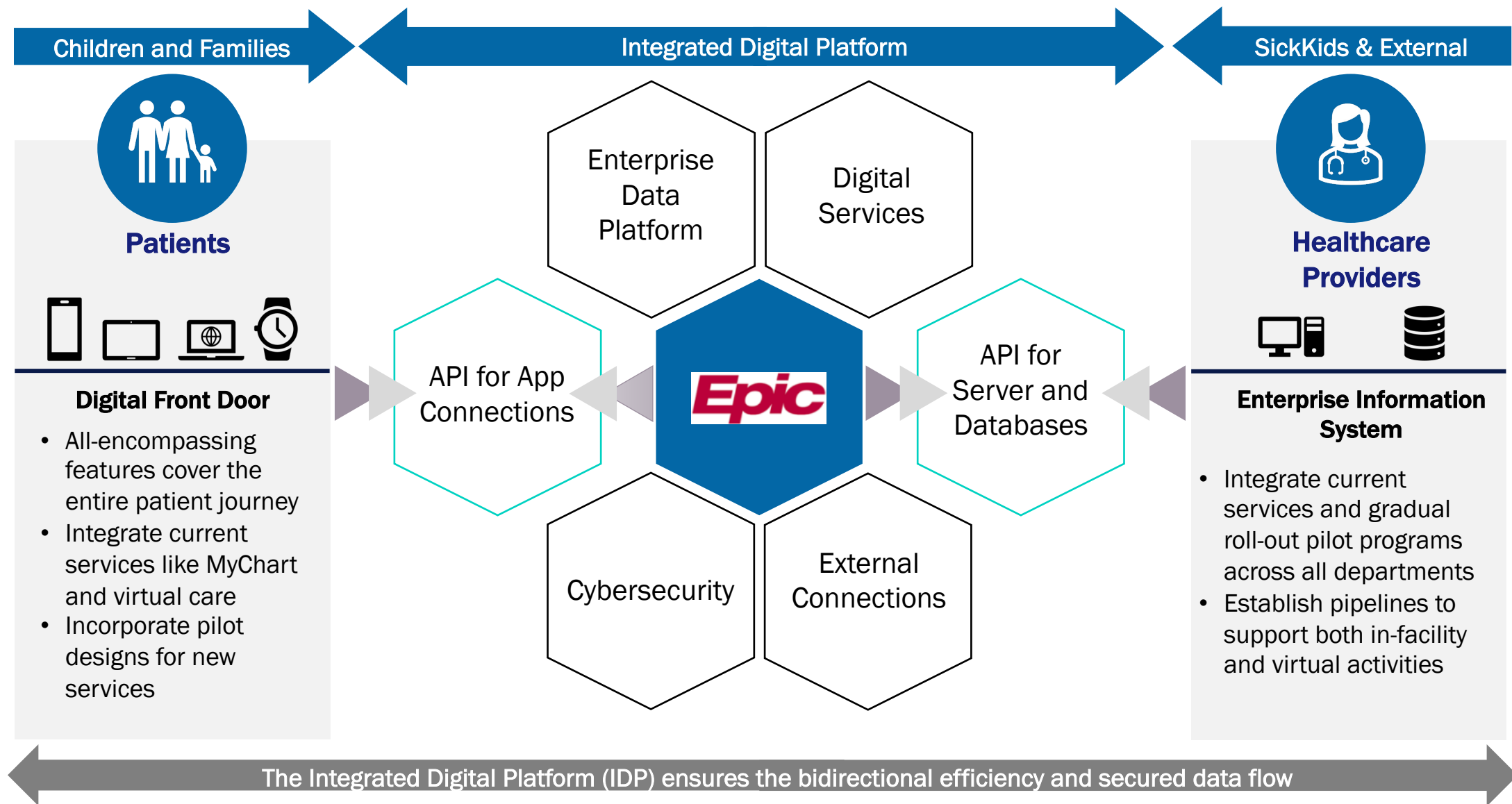
Low Utilization

Adoption rate of the digital solutions by patients and caregivers are low due to inconvenient designs that multiply the process of sign-in and data entry and cumbersome process to collect user consent

Inefficient Data Collaboration

The need for data collection is increasing, but the effort to create an integrated data environment is still on-going

Design Proposal - Integrated Network

Children and Families → **Integrated Digital Platform** ← **SickKids & External**

Patients

Digital Front Door
- All-encompassing features cover the entire patient journey
- Integrate current services like MyChart and virtual care
- Incorporate pilot designs for new services

Enterprise Data Platform

Digital Services

API for App Connections

Epic

API for Server and Databases

Cybersecurity

External Connections

Healthcare Providers

Enterprise Information System
- Integrate current services and gradual roll-out pilot programs across all departments
- Establish pipelines to support both in-facility and virtual activities

The Integrated Digital Platform (IDP) ensures the bidirectional efficiency and secured data flow

Implementation Blueprint

Feature additive approach in a multi-phase setting

Phase I: Integration

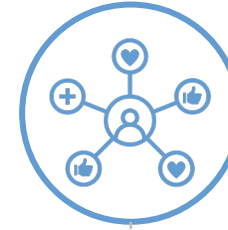### Phase II: Augmentation

Phase III: Exploration
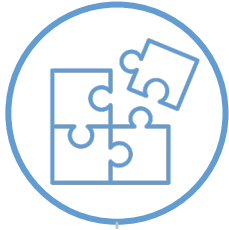
- Integrate point solutions into a centralized platform based on Epic and other current ancillary services with pathways connected to mobile Apps and enterprise systems.
- Another design focus should be surrounding on inclusion including language translation, user tutorial, color blind palette etc.
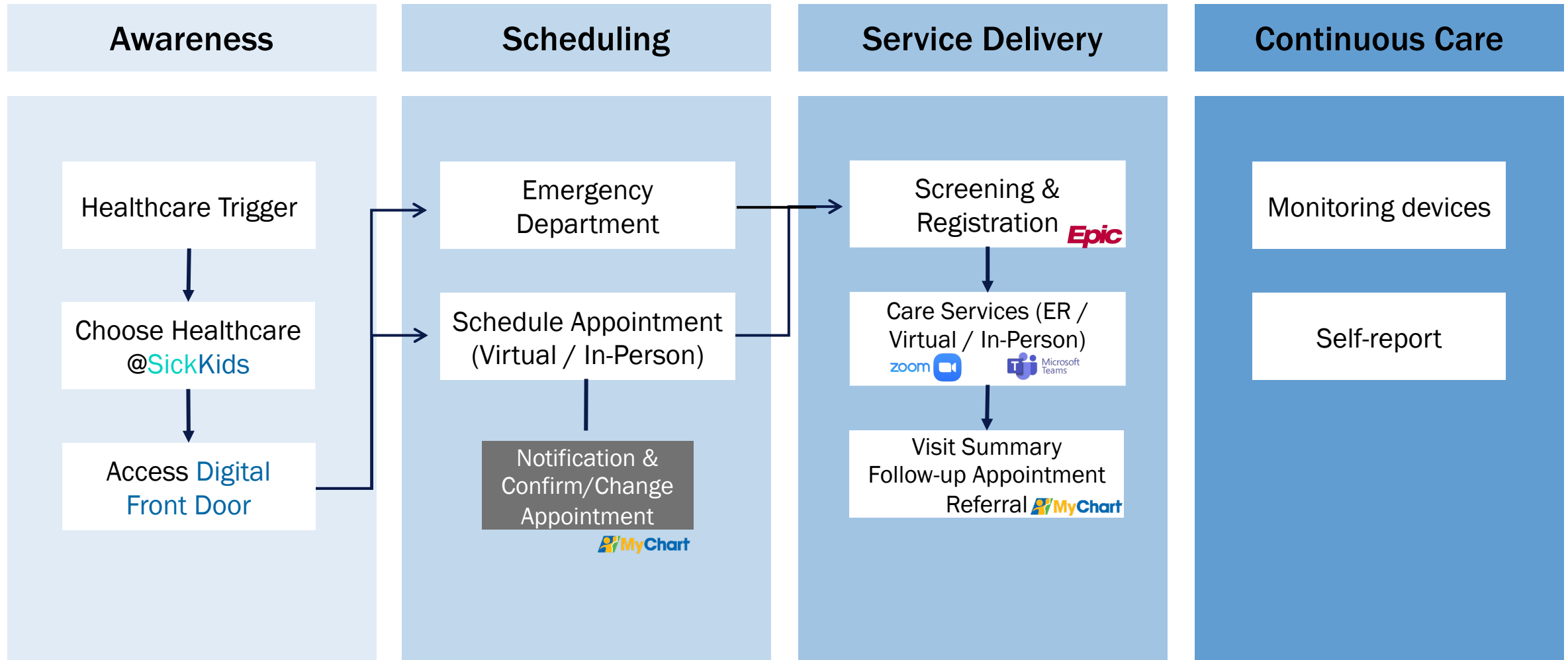
- Focus on elevating user experience by augmenting functionalities and increase available services within the network such as WayFinding, official rollout of PROMs, and integrated Beacon function.
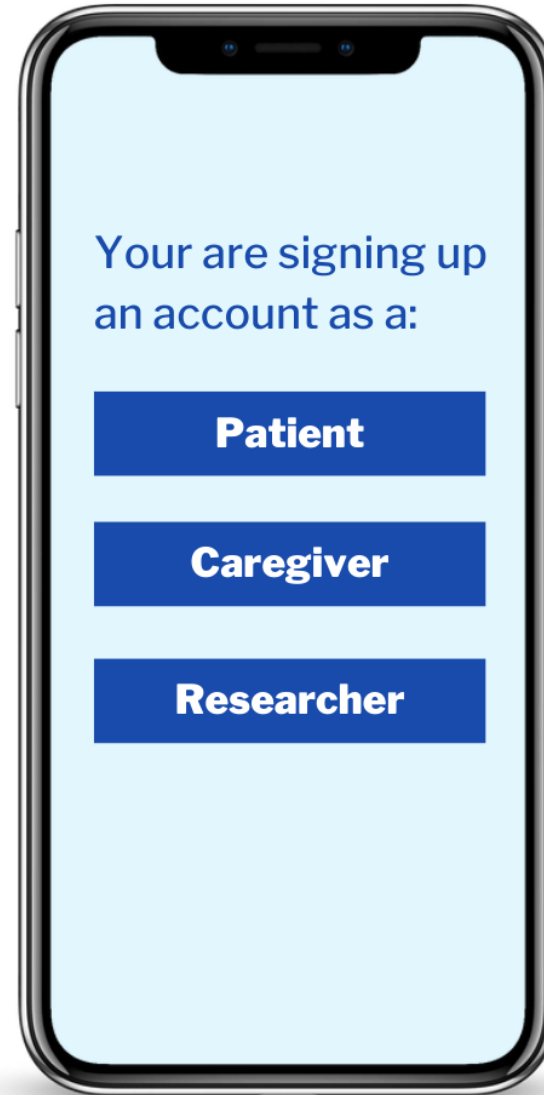
- Integrate more pathways to external users such as researchers, external service providers to diversify and explore more compatible and beneficial products and services that can improve user experience and facilitate network efficiencies.

6

Patient Journey

Awareness	Scheduling	Service Delivery	Continuous Care

Awareness
- Healthcare Trigger
- Choose Healthcare @SickKids
- Access Digital Front Door

Scheduling
- Emergency Department
- Schedule Appointment (Virtual / In-Person)
- Notification & Confirm/Change Appointment — MyChart

Service Delivery
- Screening & Registration — Epic
- Care Services (ER / Virtual / In-Person) — zoom, Microsoft Teams
- Visit Summary Follow-up Appointment Referral — MyChart

Continuous Care
- Monitoring devices
- Self-report

Digital Front Door Mock-up

Digital Front Door

Your ultimate patient care solution

Get Started
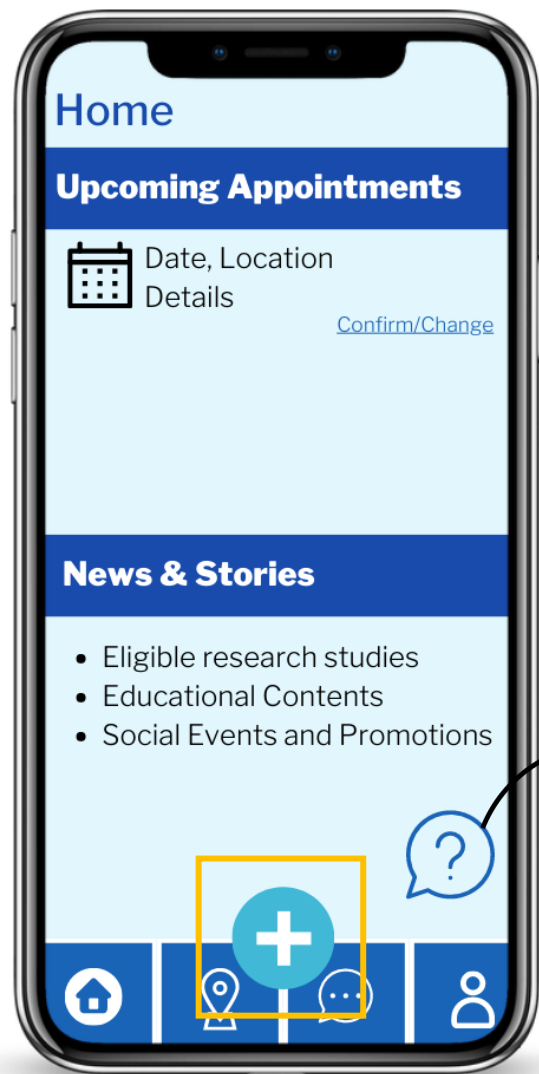
Your are signing up an account as a:
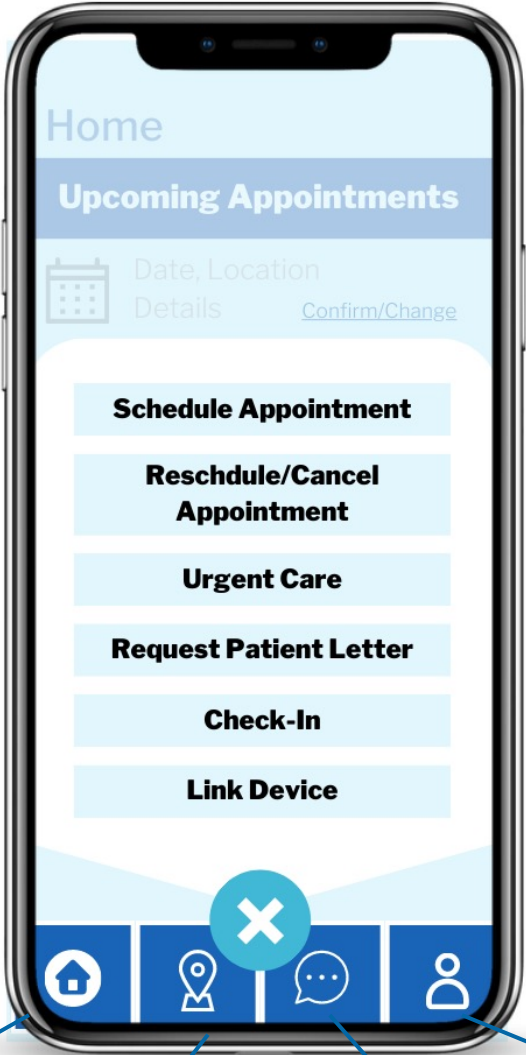
Patient

Caregiver

Researcher

- **User Roles:** adapt UI and features for different users

- **Account Security:** authentication and secured connection to enterprise data and services

- **One-Stop 24/7 Service:** comprehensive self-service for requests and information retrieval
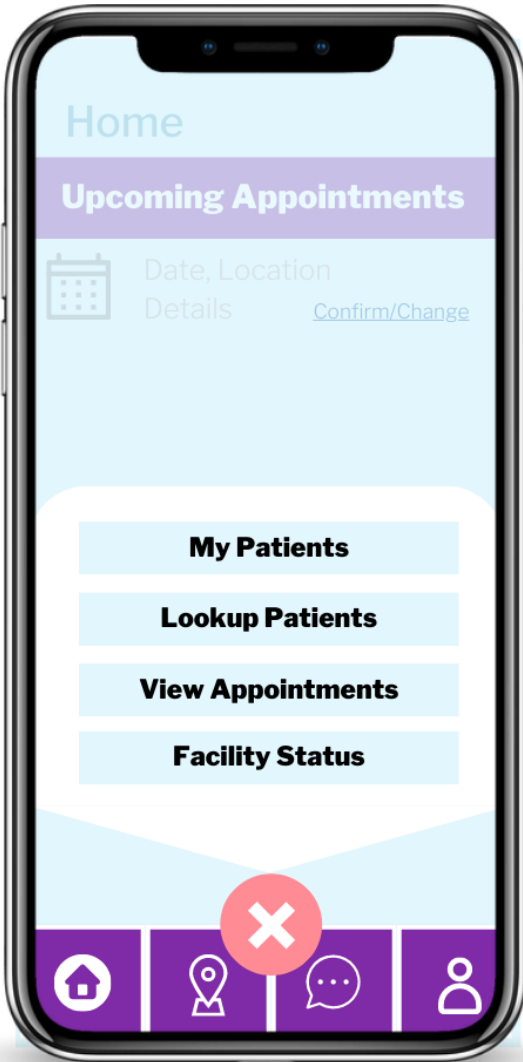
* The application should be compatible with Android/iOS/Windows systems. Only the mobile app format is shown here for the purpose of illustration.

Digital Front Door Mock-up: Patients

Help Wizard:
- Help with what-to-do
- Emergency
- Voice assistance

Home

Upcoming Appointments
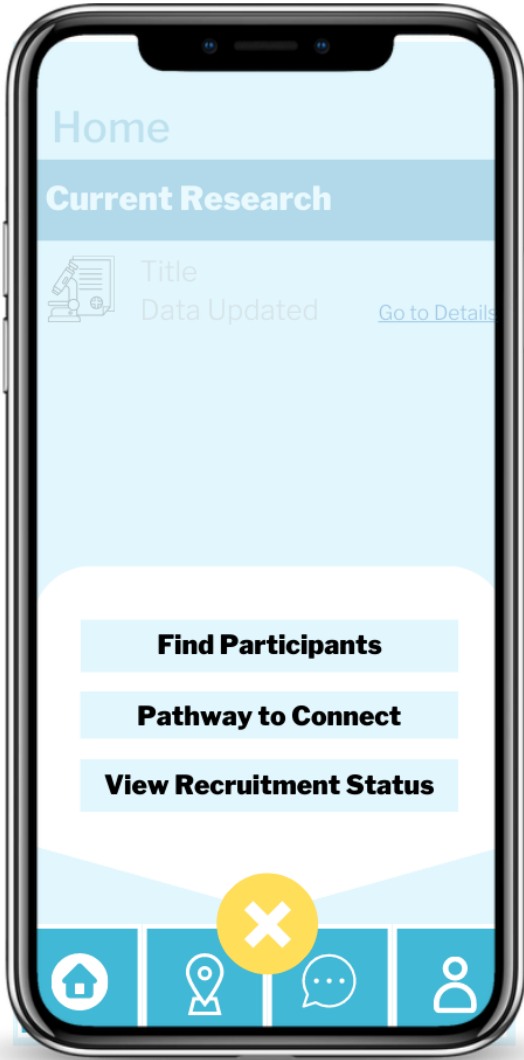
Date, Location Details Confirm/Change

Schedule Appointment

Reschdule/Cancel Appointment

Urgent Care

Request Patient Letter

Check-In

Link Device

Home Page

Smart Wayfinding

Msg to Health Team

Account Profile & Settings

Digital Front Door Mock-up: Caregivers and Researchers

Caregivers

Home

Upcoming Appointments

Date, Location
Details   Confirm/Change

My Patients

Lookup Patients

View Appointments

Facility Status

Researchers

Home

Current Research

Title
Data Updated   Go to Details

Find Participants

Pathway to Connect

View Recruitment Status

Promoting Digital Front Door

Tier 1: Passive Promotion

Utilize only current resources
Minimal cost

1. Website banners and social media campaigns

2. On-hold and auto attendant messages

3. Email communication

Tier 2: Active Promotion

Incurring material costs
Require staff involvement

1. Posters in waiting areas

2. QR codes in appointment rooms

3. Brochures at receptions

Tier 3: Word-of-Mouth

Partnership marketing
Users to share experience

1. Referral program for patients and staffs

Measurement

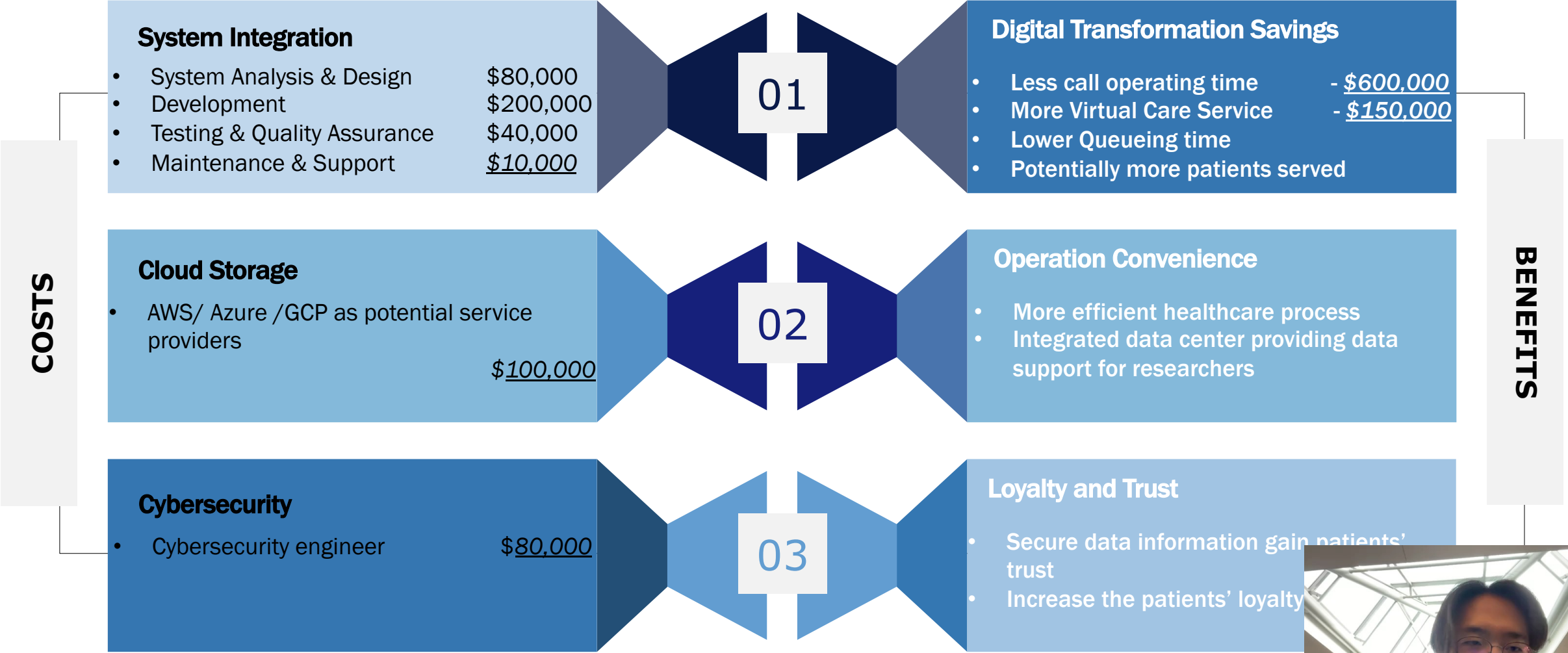| Prior to Implementation	Phase I	Phase II	Phase III
1. Uptake rate of current system 2. User satisfaction 3. Monthly clinical visits	1. Adoption rate and user satisfaction 2. Data utilization and quality 3. System utilization and interaction	1. Same as Phase I 2. User satisfaction with specific functions (Wayfinding, PROMs, Beacon)	1. Same as Phase II 2. Quantity and quality of collaborations

KPIs - Measure of Success

Cost-Benefit Analysis

COSTS

System Integration
- System Analysis & Design — $80,000
- Development — $200,000
- Testing & Quality Assurance — $40,000
- Maintenance & Support — *$10,000*

Cloud Storage
- AWS/ Azure /GCP as potential service providers — *$100,000*

Cybersecurity
- Cybersecurity engineer — *$80,000*

01

02

03

BENEFITS

Digital Transformation Savings
- Less call operating time — *- $600,000*
- More Virtual Care Service — *- $150,000*
- Lower Queueing time
- Potentially more patients served

Operation Convenience
- More efficient healthcare process
- Integrated data center providing data support for researchers

Loyalty and Trust
- Secure data information gain patients' trust
- Increase the patients' loyalty

*Numbers in italic and underline are ongoing costs and benefits. Assumptions and calculations can be found in the appendix

Thank You!

Appendix 1

Assumptions for estimating costs and benefits

- Using market price of mainstream cloud service providers
- Using estimated required service volume for patients in the SickKids network based on the statistics provided
- The uptake rate is 50%
- 10% of patients of clinics change to virtual care
- [Virtual Care Reduces Healthcare Costs by About $100 Per Visit](#)
- Average cost of cybersecurity engineers is $80,000

Appendix 2

Calculations for calculating the cloud storage costs

- If the average size of text data per user is 100 MB and the average size of image data per user is 1 GB,
    the total data storage required for 300k users would be:
- Text data: 30 TB (300,000 users x 100 MB)
- Image data: 300 TB (300,000 users x 1 GB)
- The estimated monthly cost for cloud storage would be higher than the previous scenario due to the larger amount
    of data being stored. Assuming the same assumptions as before, the estimated monthly cost for cloud
    storage would be approximately:
- Amazon Web Services (AWS) S3: $5,850/month (330 TB x $0.023/GB/month standard storage,
    plus $0.005/1,000 PUT requests, and $0.004/10,000 GET requests)
    Google Cloud Storage: $6,480/month (330 TB x $0.020/GB/month standard storage,
    plus $0.005/10,000 Class A operations and $0.004/10,000 Class B operations)
- Microsoft Azure Blob Storage: $6,120/month (330 TB x $0.020/GB/month standard storage,
    plus $0.01/10,000 storage transactions)

Appendix 3

Calculations for calculating the cloud storage costs

- The number of labor required to design an app that serves 300K people, integrates 5 platforms,
    and supports both Android and iOS systems can vary widely depending on several factors, such as
    the complexity of the app's features, the skill level of the developers, the development methodology used,
    and the project timeline.
- However, here is a rough estimate of the number of labor hours required to complete such a project:
- Design phase: Depending on the complexity of the app, the design phase could take anywhere from 100 to 400 labor hours.
- Development phase: The development phase will likely require a team of developers with skills in both Android
    and iOS development, as well as experience in integrating with multiple platforms.
    Depending on the complexity of the app, the development phase could take anywhere from 2000 to 5000 labor hours.
- Quality assurance and testing phase: To ensure that the app is bug-free and functions correctly on all platforms,
    a quality assurance and testing phase will be necessary. This phase could take anywhere from 300 to 1000 labor hours.
- Deployment and maintenance phase: After the app is developed, it will need to be deployed to the app stores
    and maintained with updates and bug fixes. This phase could require anywhere from 200 to 500 labor hours.
- Therefore, the total number of labor hours required for this project could range from 2600 to 6900 hours.
    However, it's important to note that this estimate is highly dependent on several factors and should be taken
    as a rough guideline only.